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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,357

06/12/2006

Youji Shibahara

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12/10/2010

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EXAMINER

ANYIKIRE, CHIKAODILI E

ART UNIT

PAPER NUMBER

2482

NOTIFICATION DATE

DELIVERY MODE

12/10/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ddalecki@wenderoth.com

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<b>Office Action Summary</b>	<b>Application No.</b> 10/563,357	<b>Applicant(s)</b> SHIBAHARA ET AL.	
	<b>Examiner</b> CHIKAODILI E. ANYIKIRE	<b>Art Unit</b> 2482	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 38-55, 72 and 75 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 38-55, 72 and 75 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This application is responsive to application number (10/563357) filed on June 24, 2006. Claims 38-55, 72, and 75 are pending and have been examined.

### ***Information Disclosure Statement***

2. Acknowledgement is made of applicant's information disclosure statement.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 38-55, 72, and 75 rejected under 35 U.S.C. 102(e) as being anticipated by Sung et al (US 2005/0018772, hereafter Sung).

As per **claim 38**, Sung discloses a coding mode determining apparatus for determining at least one of a plurality of candidate coding modes of an image block, comprising: a simple motion estimation portion that derives a coding cost of each of the coding modes, based on a simple motion estimation for small blocks, which are partitions of an image block that are obtained with each of the coding modes; a coding

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mode selecting portion that selects a subset of the plurality of the coding modes, based on the coding costs derived by the simple motion estimation portion; a complex motion estimation portion that derives a coding cost of each of the coding modes, based on a complex motion estimation for the small blocks obtained with at least a subset of said subset of coding modes; and a coding mode determining portion that determines a coding mode of the image block, based on the coding costs derived by the complex motion estimation portion (paragraphs [0045] lines 1 – 6 and [0048] lines 15 – 26; Sung discloses that a SAD as the coding cost and that it starts with an integer pixel resolution (simple motion estimation) and sent to a refiner (complex motion estimation) for sub-pixel resolution ).

As per **claim 39**, Sung discloses The coding mode determining apparatus according to claim 38, wherein, when deriving a coding cost of each of the coding modes, the simple motion estimation portion performs a simple motion estimation in a plurality of picture reference directions on each of the small blocks obtained with each of the coding modes to calculate a coding cost, then selects a picture reference direction having the lowest coding cost for each individual small block, then sums up the coding costs of all of the small blocks relating to the selected picture reference directions for each of candidate division methods individually to derive a coding cost of the coding mode of each of the candidate division methods (paragraphs [0048] lines 15—26, [0053], and [0054]).

As per **claim 40**, Sung discloses the coding mode determining apparatus according to claim 38, wherein, when deriving a coding cost of each of the coding

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modes, the simple motion estimation portion performs a simple motion estimation in a plurality of picture reference directions on each of the small blocks obtained with each of the coding modes to calculate a coding cost, then converts the coding cost of each of the small blocks for each picture reference direction individually into a coding cost per image block to derive a coding cost of the coding mode of each of candidate division methods for each of the reference directions (paragraph [0042]; the picture types describe the reference direction for motion estimation).

As per **claim 41**, Sung discloses the coding mode determining apparatus according to claim 39, wherein the simple motion estimation in a plurality of picture reference directions in the simple motion estimation portion includes only forward prediction in which a temporally preceding picture is referenced, and backward prediction in which a temporally following picture is referenced (paragraph [0042]).

Regarding **claim 42**, arguments analogous to those presented for claim 41 are applicable for claim 42.

As per **claim 43**, The coding mode determining apparatus according to claim 39, wherein the simple motion estimation in a plurality of picture reference directions in the simple motion estimation portion includes forward prediction in which a temporally preceding picture is referenced, backward prediction in which a temporally following picture is referenced, and bi-directional prediction in which pictures that are on both sides in time are referenced (paragraph [0042]).

Regarding **claim 44**, arguments analogous to those presented for claim 43 are applicable for claim 44.

As per **claim 45**, Sung discloses the coding mode determining apparatus according to claim 39, wherein the simple motion estimation in a plurality of picture reference directions in the simple motion estimation portion includes forward prediction in which a temporally preceding picture is referenced, and backward prediction in which a temporally following picture is referenced, and wherein the simple motion estimation portion derives a coding cost where bi-directional prediction in which pictures that are on both sides in time are referenced is performed, based on the forward prediction and the backward prediction (paragraphs [0042] and [0044]).

Regarding **claim 46**, arguments analogous to those presented for claim 45 are applicable for claim 46.

As per **claim 47**, Sung discloses the coding mode determining apparatus according to claim 38, wherein the complex motion estimation portion determines a picture reference direction in the complex motion estimation, based on the simple motion estimation in the simple motion estimation portion (paragraph [0048]).

As per **claim 48**, Sung discloses the coding mode determining apparatus according to claim 47, wherein, as a result of the simple motion estimation for the small blocks in the simple motion estimation portion, the complex motion estimation portion selects both the forward prediction and the backward prediction when their coding costs

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are substantially the same, and selects one of the prediction that has the smaller coding cost when their coding costs are different (paragraph [0042] and [0048]).

As per **claim 49**, Sung discloses the coding mode determining apparatus according to claim 38, wherein the complex motion estimation portion selects at least a further subset of said subset of coding modes, based on the simple motion estimation for the small blocks in the simple motion estimation portion (paragraph [0048]).

As per **claim 50**, Sung discloses the coding mode determining apparatus according to claim 49, wherein the complex motion estimation portion selects each of the coding modes in ascending order of their coding costs, and terminates the selection immediately before the sum of the coding costs of the selected coding modes exceeds a margin for the processing amount (paragraph [0048]).

As per **claim 51**, Sung discloses the coding mode determining apparatus according to claim 38, wherein the simple motion estimation portion or the complex motion estimation portion changes a method of motion estimation in the simple motion estimation or the complex motion estimation in such a manner that a processing amount for the motion estimation process is maintained substantially constant (paragraphs [0041], [0042], and [0048]).

As per **claim 52**, Sung discloses the coding mode determining apparatus according to claim 38, wherein the simple motion estimation is motion estimation with integer pixel accuracy, and wherein the complex motion estimation is motion estimation with non-integer pixel accuracy (paragraph [0048]).

As per **claim 53**, Sung discloses an integrated circuit comprising the coding mode determining apparatus according to claim 38 (paragraph [0055]).

As per **claim 54**, Sung discloses an image coding apparatus comprising: the coding mode determining apparatus according to claim 38; and a coding apparatus that codes an image block, based on a coding mode of the image block that is determined by the coding mode determining apparatus (paragraph [0048]).

As per **claim 55**, Sung discloses an integrated circuit comprising the image coding apparatus according to claim 54 (paragraph [0055]).

Regarding **claim 72**, arguments analogous to those presented for claim 38 are applicable for claim 72.

Regarding **claim 75**, arguments analogous to those presented for claim 38 are applicable for claim 75.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHIKAODILI E. ANYIKIRE whose telephone number is (571)270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax



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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/  
Supervisory Patent Examiner, Art Unit 2482

/Chikaodili E Anyikire/  
Examiner, Art Unit 2482